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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/742,916	12/23/2003	Linus Albert Fetter	37310-000107/US	7346
46900	7590	11/29/2006	EXAMINER	
MENDELSON & ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102			ROSENAU, DEREK JOHN	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/742,916

Applicant(s)

FETTER ET AL.

Examiner

Derek J. Rosenau

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-20 and 26-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-20 and 26-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 15, 16, 18, and 26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Larson, III et al. (US 6215375).
3. With respect to claim 15, Larson, III et al. discloses an integrated structure having a piezoelectric device (Fig 1), the integrated structure comprising: a substrate (item 27) having a cavity (Fig 1); a piezoelectric layer (item 22) integral to the piezoelectric device and supported on the substrate, such that the piezoelectric layer spans the cavity to form a suspended membrane portion of the piezoelectric layer (Fig 1); and one or more conducting elements (items 21 and 23) integral to the piezoelectric device and mounted on the suspended membrane portion of the piezoelectric layer (Fig 1).
4. With respect to claim 16, Larson, III et al. discloses the device of claim 15, wherein the piezoelectric device comprises a thin film resonator (column 1, lines 45-61).
5. With respect to claim 18, Larson, III et al. discloses the device of claim 15, wherein: the suspended membrane portion of the piezoelectric layer has an inner side

facing towards the cavity in the substrate and an outer side facing away from the cavity in the substrate (Fig 1); at least one conducting element (item 23) is mounted on the inner side of the suspended membrane portion of the piezoelectric layer; and at least one conducting element (item 21) is mounted on the outer side of the suspended membrane portion of the piezoelectric layer.

6. With respect to claim 26, Larson, III et al. discloses the device of claim 15, wherein the piezoelectric layer is in direct contact with the substrate on opposing sides of the cavity (Fig 1).

7. With respect to claim 27, Larson, III et al. discloses the device of claim 15, wherein all support for the piezoelectric layer is provided by the substrate without any intervening structure (Fig 1).

8. With respect to claim 28, Larson, III et al. discloses the device of claim 18, wherein the at least one conducting element mounted on the inner side extends within the cavity beyond the surface of the inner side (Fig 1).

9. With respect to claim 29, Larson, III et al. discloses the device of claim 18, wherein the at least one conducting element mounted on the inner side is not in direct contact with the substrate (Fig 1).

10. With respect to claim 30, Larson, III et al. discloses the device of claim 29, wherein: the piezoelectric layer is indirect contact with the substrate on opposing sides of the cavity (Fig 1); all support for the piezoelectric layer is provided directly by the substrate without any intervening structure (Fig 1); and the at least one conducting

Art Unit: 2834

element mounted on the inner side extends within the cavity beyond the surface of the inner side (Fig 1).

11. Claims 15, 16, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ella (US 6278342).

12. With respect to claim 15, Ella discloses an integrated structure having a piezoelectric device (Figs 2 and 4), the integrated structure comprising: a substrate (item 200) having a cavity (item 210); a piezoelectric layer (item 100) integral to the piezoelectric device and supported on the substrate, such that the piezoelectric layer spans the cavity to form a suspended membrane portion of the piezoelectric layer (Figs 2 and 4); and one or more conducting elements (items 110 and 120) integral to the piezoelectric device and mounted on the suspended membrane portion of the piezoelectric layer (Figs 2 and 4).

13. With respect to claim 16, Ella discloses the device of claim 15, wherein the piezoelectric device comprises a thin film resonator (column 2, lines 2-5).

14. With respect to claim 18, Ella discloses the device of claim 15, wherein: the suspended membrane portion of the piezoelectric layer has an inner side facing towards the cavity in the substrate and an outer side facing away from the cavity in the substrate (Figs 2 and 4); at least one conducting element (item 110) is mounted on the inner side of the suspended membrane portion of the piezoelectric layer; and at least one conducting element (item 120) is mounted on the outer side of the suspended membrane portion of the piezoelectric layer.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ella or Larson, III et al. in view of Ketcham (US 5231327).

17. With respect to claim 17, both Ella and Larson, III et al. discloses the device of claim 15.

Neither Ella nor Larson, III et al. disclose expressly that the piezoelectric device comprises a T-cell building block.

Ketcham teaches a piezoelectric network that includes a T-cell building block (Fig 6).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the T-cell building block of Ketcham with the piezoelectric device of either Ella or Larson, III et al. for the benefit of a circuit capable of being used in filters, which are commonly found in devices such as cellular phones.

18. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ella in view of Chason et al. (US 4642511).

19. With respect to claim 19, Ella discloses the device of claim 15, further comprising one or more conducting leads (items 110, 120, PORT A, and PORT B) running along the suspended membrane portion of the piezoelectric layer from one or more

Art Unit: 2834

corresponding conducting elements towards an edge of the piezoelectric layer. As can be seen in from Figures 2 and 4, portions of the electrodes (items 110 and 120) extend from the membrane portion, to, and beyond the edges of the piezoelectric layers, forming leads for the electrodes which are shown as PORT A and PORT B.

Ella does not disclose expressly that the integrated structure is mounted in an edge-on fashion within a recess of a package having one or more bonding leads mated to the one or more conducting leads of the piezoelectric device.

Chason et al. teaches a piezoelectric device (Figs 2 and 3) that is mounted in an edge-on fashion within a recess (item 24) of a package having one or more bonding leads (item 26) mated to the one or more conducting leads (item 15) of the piezoelectric device.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the recessed packaging of Chason et al. with the piezoelectric device of Ella et al. for the benefit of reducing the size of the device (column 5, lines 7-9).

20. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ella in view of Chason et al. in view of Fischer et al. (US 5701032).

21. With respect to claim 20, the combination of Ella and Chason et al. discloses the device of claim 19.

Neither Ella nor Chason et al. disclose that each bonding lead of the package is mated to the corresponding conducting lead of the piezoelectric device by a reflowed solder bump.

Fischer et al. teaches a package for integrated circuits in which the package is mated to the corresponding conducting lead of the piezoelectric device by a reflowed solder bump. (column 10, lines 47-49).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the packaging arrangement of Fischer et al. with the piezoelectric device of Ella as modified by Chason et al. for the benefit of using conventional mounting techniques to connect the piezoelectric device to the package (column 10, lines 47-49).

Response to Arguments

22. Applicant's arguments filed 9/14/2006 have been fully considered but they are not persuasive. Applicant argues that the piezoelectric layer of Ella does not span a cavity to form a suspended portion as the piezoelectric layer is fully supported by other structure. However, as can be seen in Figures 2 and 4 of Ella, the piezoelectric layer clearly spans the cavity, and while there is intervening structure, the piezoelectric layer is suspended over the cavity by the intervening membrane layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is 571-272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Derek J Rosenau
Examiner
Art Unit 2834

DJR
11/22/2006

